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Moderating Impact of IT Outsourcing Arrangements in a Muslim Country

ABSTRACT

In recent years, information technology (IT) outsourcing continues to receive favorable acceptance to maximize organization's benefits. There is evidence showing how partnership quality plays a significant role in achieving overall IT outsourcing success. This research investigates the moderating impact of information technology outsourcing arrangements on the relationship between partnership quality and IT outsourcing success. IT outsourcing arrangements seem to indicate dire need for empirical research. In this study two specific IT outsourcing arrangements are focused on, namely, duration of contract and degree of integration. These arrangements may have different implications on the relationship examined. This research explores and hypothesized such implications. It was tested using a sample from IT managers in 143 Malaysian organizations. Findings and implications of the research are discussed. The findings also provide an insight into IT outsourcing practices in a Muslim country.

Keywords

Partnership Quality, Outsourcing Arrangements, Information Technology Outsourcing Success Model.

1.0 INTRODUCTION

Many organizations, irrespective of size are treating IT as a commodity service, opting from a focus on internal development of information systems to external partnership and alliances (Kern & Willcocks, 2000; Kakabadse, N & Kakabadse, A. 2000). IT outsourcing is often an option due to its perceived benefits, predominantly to reduce costs while not discounting the need to focus on core competencies, to increase efficiencies and attaining accessibility to new technologies.

Lee *et al.*(2000) summarizes that most researchers identified several different theoretical models. Earlier research relevant to IT outsourcing was focused from economic viewpoint involving transaction cost theory, resource dependence theory and agency cost theory. However, stressing on cost efficiency alone fails to consider other factors that affect the organization. On the other hand, social view involved with political, social contract and social exchange theories considers how relationships between an organization and its external environment are managed. Consequently, the transactional relationship between service receivers and service provider has evolved from mere contractual agreements to more recently resting on partnership concept (Grover *et al.,*1996). This research adopts the social exchange theory to examine the impact of IT outsourcing, with focus on the interaction process.

In spite of numerous research on IT outsourcing there is a gross shortage of research investigating IT outsourcing arrangements (Lee *et al.,* 2004) and its impact on interaction towards IT outsourcing success. This is evident particularly in Malaysian context, largely in Muslim world. Interestingly, Malaysia's private sector and government agencies are seeing a rising trend in engaging IT outsourcing relationships involving significant amount of deals. Malaysia can expect to attract at least RM11.4 billion of the global outsourcing business that is projected to be worth RM1.9 trillion by 2008, briefs Price Waterhouse Coopers, a consultancy firm (Cheong, 2003). Hence, more empirical research is definitely needed in order to further understand IT outsourcing practices in Malaysian setting.

This paper firstly, provides a review of partnership quality, IT outsourcing arrangements and IT outsourcing success. The research model is presented and research questions are then stated. The research method and survey instrument employed are presented. Next, the results of data analysis is described and discussed in relation to the research questions. Finally, suggestions for further research, contributions and limitations of this study conclude the discussion.

2.0 RESEARCH BACKGROUND

2.1 IT Outsourcing and Partnership

There are many definitions of IT outsourcing. In this study, we adopt the definition of IT outsourcing articulated by Dibbern, *et al.* (2004): "the organizational arrangement instituted for obtaining IT services and the management of resources and activities required for producing these services". Whereby, IT services refer to the manner in which IT products are delivered and the provision of IT functions. Functions may include system operations, applications development, applications maintenance, network and telecommunications management, help desk and end user support and systems planning and management (Grover *et al.* 1994). Organizational arrangement refers to the formal structure of the responsibility and delegation of tasks within the IT function (Lacity and Hirschheim, 1993).

Among the major trends in IT outsourcing, the change of relationship between the clients and the service providers is the most imperative (Levina & Ross, 2003, Cullen *et al.*, 2005a,b). Many researchers reported that closer relationships result from more frequent and relevant knowledge exchanges

among high performance partners. Partnerships can create a competitive advantage through strategic sharing of organizations' key information (Probst *et al.*, 2000, Lane *et al*., 2005).

Despite the many dimensions that have been put forward by various researchers, a conclusive dimension pertaining to partnership has not been conclusive. Many researchers employed social exchange theory in examining partnership. Amongst others, Lee and Kim (1999) put forth that the partnership quality is a key predictor of IT outsourcing success since most of partnership quality variables such as trust, benefit and risk share and commitment. Sun *et al.* (2002) investigated the factors influencing outsourcing partnerships and how it is associated with IT outsourcing satisfaction.

Knowledge sharing through outsourcing partnership also contributed to outsourcing benefits (Sengupta & Zviran, 1997, Lee, 2001, Lee & Kim, 2005). Based on literature rooted from works of Nonaka and Takeuchi (1995), knowledge sharing (explicit and tacit) had been considered as one of the predictor in several IT outsourcing research (eg. Lee & Kim, 2005).

2.2 IT Outsourcing Arrangements

In order to gain some advantages from outsourcing, several configuration of IT outsourcing arrangements were identified. Generally, organizations need to retain some control of their outsourcing strategy. In the attempt to achieve better outsourcing results, several researchers recognized the importance of IT outsourcing configuration model. IT outsourcing configuration involves a variety of choices that may result in different types and forms of outsourcing arrangements (Lacity & Willcocks, 1998; Dibbern *et al.*; 2004, Cullen *et al.,* 2005b). IT outsourcing arrangements examined in this study are degree of outsourcing and duration of contract.

As highlighted by several observers (Lacity & Hirschheim, 1993; Lacity & Willcocks, 1998; Klepper & Jones, 1998) degree of outsourcing may be broadly categorized as total, selective and minimal outsourcing based on the percentage of IT budget being outsourced. An extensive study through interviews on selective versus total outsourcing decisions was conducted by Lacity *et al.* (1994). Outcome of the study indicates most organizations engage in selective outsourcing, which was claimed to be more controllable. Similarly, outcomes from a survey in Australia (Cullen, *et al.*, 2002) echoes similar findings to study conducted in US and UK (Lacity & Willcocks, 1998), concluding preference for selective outsourcing. However, contrary to previous findings, a follow-up study conducted by Lee *et al*. (2004), with sample drawn from firms in South Korea their findings indicate no support to the hypothesis that selective outsourcing will be more successful than minimal or comprehensive outsourcing.

Accordingly, degree of integration suggests an arrangement which should be considered by any organizations considering outsourcing. Its growing importance also indicates its pertinence as a research domain.

An outsourcing contract provides a legally bound, institutional framework in which each party's rights, duties, and responsibilities are codified and the goals, policies and strategies underlying the arrangement are specified (Gottschalk & Solli-Saether, 2005). In addition, research on performance periods indicates that short-term contracts yield cost savings more often than long-term contracts (Lacity & Willcocks, 1998). Their study was conducted based on case studies comprising of 61 sourcing decisions made in 40 organizations in the UK and US. Lee *et al.* (2004) conducted their study on performance period drawn from large organizations in Korea, sending survey questionnaires targeted to IT managers. Their analysis records long-term contracts were found to be more successful than short-term contracts, but not more successful than medium-term contracts. Success was measured on strategic competence, cost efficiency and technology catalysis.

Hence, the time dimension associated with outsourcing contracts is crucial in determining the kind of outsourcing that an organization may enter into.

2.3 IT Outsourcing Success

Organizations are making large investments in IT outsourcing but are hard-pressed to evaluate the success of their outsourced IT. Generally, IT outsourcing researchers commonly cited three strategies in attaining optimal IT outsourcing success even though the focus may varies from one company to the next (Grover *et al.*, 1996; Lee and Kim, 1999; Lee, 2001; Lee and Kim, 2003). Grover and Teng (1996) aggregated prior research in developing a cumulative framework for accessing a outsourcing success from a management perspective. They suggested that success of outsourcing could be assessed in terms of benefits. These can be described in three categories, namely strategic, economic and technological benefits.

This section had examined the necessary component towards the development of this study. The above discussion lead to questions: What is the status of IT outsourcing practices in Malaysia? Is there a relationship between IT outsourcing arrangements and outsourcing benefits? Furthermore, do IT outsourcing arrangements affect the outsourcing relationship outcome?

3.0 RESEARCH MODEL

The objective of this study was to examine Malaysian organizations that outsource IT function and understand how some variables affect this success. The basic model studied the relationship between partnership quality and IT outsourcing success (herewith abbreviated as ITOS). The effects of IT outsourcing arrangements on this relationship were explored. The research model is shown in Figure 1.

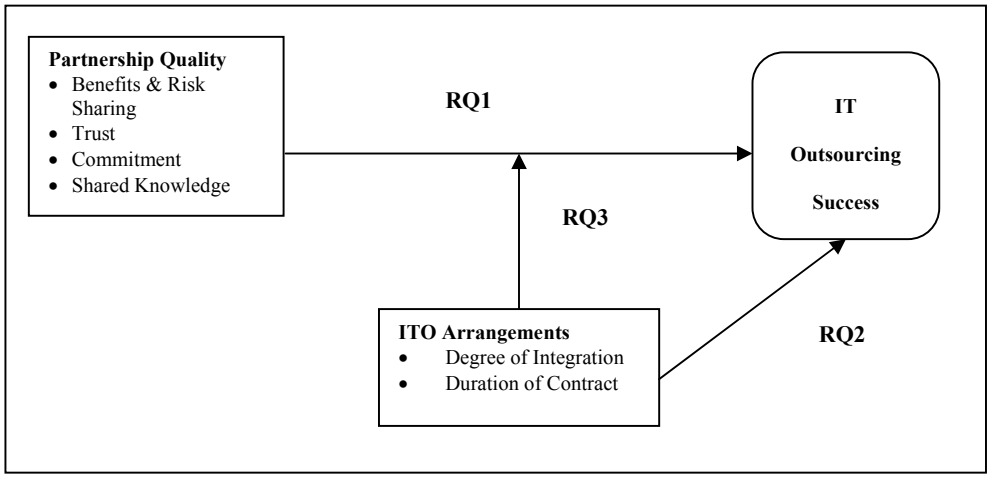

Figure 1: The Research Model

3.1 Research Question and Measurements

The following research questions were investigated;

RQ1: *Is there a relationship between partnership quality and ITOS?*

RQ2: *Is there a relationship between IT outsourcing arrangements and ITOS?*

RQ3: *Does IT outsourcing arrangements moderate the relationship of partnership quality and ITOS?*

A questionnaire based on previous literature was developed. Each construct for partnership quality and ITOS in the model is measured using multiple-item measurement scale, where each item was anchored on a seven-point Likert scale from 'strongly disagree ' to 'strongly agree' which infers to a strong agreement. In order to elicit information for IT outsourcing characteristics, respondents were asked to tick the appropriate responses.

Partnership quality, the independent variable in the research model, refers to interorganizational relationship to achieve shared goals of participants. The essence of the partnership quality matches the social exchange relations. To capture these relationships, the constructs were culled from literature and adapted in this study. The operational definition and related literature are shown in Table 1.

Table 1: Operational definition for partnership quality and related literature

Construct	Operational definition	Related Literature	Measurement Items
Benefit and Risk Sharing	The degree of articulation and agreement on benefit and risk-sharing between outsourcing partners.	MacFarlan and Nolan (1995), Sun *et al*. (2002),Lee and Kim (1999, 2003).	3
Trust	The degree of confidence and willingness between IT outsourcing partners.	Mohr and Spekmen (1994), Sabherwal (1999), Lee and Kim (1999, 2003), Lee and Huynh (2005).	4
Knowledge Sharing	The extend to which activities of transferring or disseminating knowledge is communicated between IT outsourcing partners	Nonaka and Takeuchi (1995), Lee (2001), Choi and Lee (2003).	4
Commitment	The degree of the pledge of relationship continuity between IT partners	Mohr and Spekman(1994), Lee and Kim (1999), Sun *et al*. (2002).	4

Two IT outsourcing arrangements were identified in this study, namely, duration of contract and degree of outsourcing. Contract duration is typically discussed as short-term (shorter than four years), medium-term (longer than four years and shorter than seven years) and long term (longer than seven years). Based on these parameters, suggested by Lacity and Willcocks (1998); this study adopts this categorization to examine contractual length of outsourcing arrangement.

Secondly, the following definitions were operationalized for the degree of integration. This is also based on categorization posed by Lacity and Willcocks (1998).

- Minimal outsourcing: Less than 20% of the IT functions are outsource to external provider(s).
- Selective outsourcing: Decide to outsource selected IT functions from external provider(s) between 20% to 80% of the IT budget.
- Total outsourcing: Marks the decision to transfer the equivalent of more than 80% of the IT budget for the IT budget for IT assets, staff, and management responsibility to external IT provider(s).

Despite over a decade of research into IT outsourcing only one measure of IT outsourcing success has been developed. IT outsourcing success, the dependent measure of this study refers to the overall organizational advantage obtained from organizations outsourcing their IT functions. To capture these advantages of outsourcing Grover, Cheon and Teng (1996) 's instrument was adopted to access the degree of achieving strategic, economic and technological benefits of outsourcing. Ten items were adopted to operationalize net benefits (strategic, economic and technological benefits). Time and time again, Grover and Teng's instrument had been widely used by other researchers (eg. Lee, 2001; Lee *et al*., 2004). Hence, this instrument is a valid (Lane *et al.*, 2005) and acceptable measure for the net benefits constructs.

4.0 RESEARCH METHODOLOGY

In this study, the unit of analysis is organizational level. Organizations may comprise of corporations, business units, subsidiaries or divisions served by service providers (Grover *et al.,* 1996). Cross-sectional survey research method was used. A sampling frame was developed from Small and Medium Industries Development Corporation (SMIDEC), Bursa Malaysia, Federation of Malaysian's Manufacturers (FMM), and Malaysian Civil Service Link (MCSL). The targeted respondents were IT managers managing the outsourced IT projects from both government agencies and private organizations located in the Klang Valley.

4.1 Response Rate

A total of 910 questionnaires were mailed. In order to increase response rate, cover letters, and self-address return envelopes were provided. Follow-up phone-calls were made after two weeks of postage. From the 910 questionnaires distributed, 162 questionnaires were returned after duration of nearly four weeks, which yielded about 18% response rate. In total, usable responses added up to 143 which are considered sufficient for meaningful data analysis. SPSS for Windows (version 12.0) was used to analyze the data collected.

In addition, to ensure that responses were representative of the larger population, non-response bias was assessed by comparing the early respondents with the late respondents. The early and late respondents were compared on major variables, namely partnership quality and ITOS. The result of 2-tailed t-test, indicates that no significant differences between early and late respondent at the 5% significant level. This lack of non-response bias improves confidence that the results from the study sample can be generalized to the larger population.

4.2 Demographics of Organizations

A brief demographics overview is provided of the respondent organizations and the IT outsourcing arrangements they engaged in. Table 2 summarizes the descriptive statistics of the responding organizations. Majority of the primary industry were identified as government agencies. Nearly two-thirds (78.3 %) have more than 150 employees indicating organizations are large-sized. The categorized organizational size followed the definition of SME by the Malaysian Ministry of International Trade and Industry (MITI). A majority (82.5%) of organizations that outsourced their IT functions do have IT departments. Forty-seven organizations (32.9%) outsourced 20% of their IT functions against 34 organizations (23.7%) that outsource more than 80% of their IT functions. Slightly more than half of the sample engaged in selective outsourcing. Most of the organizations (81.8%) engaged in short term contracts. Of the 143 organizations, most indicated applications development, hardware maintenance and telecommunication /network as the main three IT functions being outsourced.

Table 2: Organization Profile

Category	Frequency	Valid Percent
(a) Primary Industry		
Government agency	60	42.0
Bank / Financial Institution	12	8.4
Telecommunication / Network Services	6	4.2
Manufacturing	22	15.4
Education	7	4.9
Other Services	36	25.1
Total	143	100.0
(b) Number of employees		
Less than or 50 (*small size organizations*)	13	9.1
51 – 149 (*medium size organizations*)	18	12.6
Over 150 (*large organizations*)	112	78.3
Total	143	100.0
(c) IT Department		
Yes	118	82.5
No	25	17.5
Total	143	100.0
(d) Length of Contract		
less than 4 years	117	81.8
4 – 7 years	14	9.8
> 7 years	12	8.4
Total	143	100.0
(e) Degree of Outsourcing		
Minimal *(below 20% of IT budget)*	47	32.9
Selective *(between 21%-80% of IT budget)*	62	43.4
Comprehensive *(more than 80% of IT budget)*	34	23.7
Total	143	100.0
(f) Types of IT functions outsourced		
Application development	112	78.3
Hardware maintenance	110	76.9
Telecommunication/Network	91	63.6
Application maintenance	82	57.3
IT consulting	55	38.5
Data center	32	22.4
Help Desk	26	18.2
End user support	27	18.9
Others	8	5.6

4.3 Reliability and Validity Test

Content validity of the survey instrument was established through the adoption of validated instruments by other researchers culled from literature. The measurements were examined for their consistency with academics from IT and MIS disciplines and also practitioners from both the government and private sector during preliminary interviews. Pre-test were conducted. Subsequently, pilot study was administered with the aim of reducing biasness in the workings and format of the instrument.

The internal consistency measures (Cronbach's alpha) were obtained in order to access the consistency and stability of the measurement instrument (Hair *et al.*, 1998). The Cronbach's alpha values ranges from 0.841 for trust to 0.906 for knowledge sharing. It should be noted that all exceed Hair *et al.*(1998) generally accepted alpha level of 0.70. Convergent validity, the degree to which multiple attempts to measure the same concept is in agreement, was evaluated by item-to-total correlation. Item whose item-to-total correlation score lower than 0.4 were eliminated, however, all of the correlation are positive and significant at 0.001 level.

Discriminant validity is the degree to which measures different concepts are distinct (Bryman & Cramer, 2002). Since each variable was measured by the multiple item constructs, principal axis factoring with varimax rotation was conducted to check the unidimensionality for each domain of the proposed model. In the effort to acquire a theoretically meaningful pattern of all the items in each variable, the factors were orthogonally rotated. Analysis was performed on the seventeen items that measured components of partnership quality, and nine items for outsourcing success. Factors with eigenvalue greater than 1 are considered significant; otherwise, are disregarded. Subsequently, in interpreting factors, the appropriate cut-off significant factor loading points based on the sample size of 143 is 0.5 (Hair *et al.,* 1998). As expected, four factors emerged for partnership quality. However, two items with loading less than 0.5 were dropped. As for outsourcing success, there were no items with factor loading lower than 0.5. Finally, the instrument was well developed and there are 24 measurement items for the 5 constructs in the research model.

5.0 ANALYSIS and RESULTS

5.1 Testing the Partnership Quality _ITOS Relationship

Table 3 shows the correlation matrix for all research constructs. This gives an indication of the closeness of the associations among variables under investigation.

Table 3: Correlation Matrix for all Construct

Construct	1	2	3	4	5	6
Benefit Risk Sharing (1)	1.000					
Trust (2)	.424**	1.000				
Knowledge Sharing (3)	.439**	.464**	1.000			
Commitment(4)	.412**	.449**	.451**	1.000		
Outsourcing Success (5)	.307**	.457**	.416**	.496**	1.00	
Overall Partnership Quality(6)					.549**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

This section proceeds to answer the three research questions proposed. In order to achieve this objective, both correlation analysis and linear regression analysis were applied on RQ(1). Analysis of Variance (ANOVA) was used to compare whether there is significant difference between variables for RQ(2). Finally, regression analysis with interaction term using Analysis of Covariance (ANCOVA) was applied on RQ(3).

Hence, the hypotheses proposed in answering the first research question are:

H1a: Benefit and risk sharing is positively associated with ITOS.

H1b: Trust is positively associated with ITOS.
H1c: Knowledge sharing is positively associated with ITOS.
H1d: Commitment is positively associated with ITOS.

Partnership quality is identified by four constructs, namely benefit and risk-sharing, trust, knowledge sharing and commitment. All were found to be significantly related to ITOS. The values of Pearson's r range from r = 0.307 to r = 0.529. In addition, overall partnership quality shows a significant positive relationship with ITOS (r = 0.549) which supports the hypothesis, answering the first research question. Hence, it generally appears that the higher the degree of partnership quality the greater the accomplishment of ITOS.

Table 4 Analysis for Constructs of Partnership Quality

Constructs	IT Outsourcing Success				
	R^2	F	β/r	t	p-value
Benefit Risk-Sharing (H1a)	0.094	14.656	0.307**	3.828	0.000
Trust (H1b)	0.209	37.231	0.457**	6.102	0.000
Knowledge Sharing (H1c)	0.173	29.496	0.416**	5.431	0.000
Commitment (H1d)	0.280	54.877	0.529**	7.408	0.000
Overall partnership quality	0.302	60.981	0.549**	7.809	0.000

**Correlation is significant at the 0.01 level (2-tailed)

In reference to Table 4, all the hypotheses concerning the association of partnership quality constructs and IT outsourcing success are supported. Commitment between partners proved to be an important partnership quality and found to be positively and significantly related with ITOS. This factor contributes 28% of the variance in IT outsourcing success (β = 0.53, t-value = 7.41, p-value = 0.000). It was shown that trust contributes 20% variances established significance in predicting the success of the IT outsourcing success. Knowledge sharing, however provides 17% of the variance in IT outsourcing success. Finally, benefit and risk sharing also have influence on IT outsourcing success with

only 10% of the variance accounted for. Hence, there is validity for hypotheses drawn.

5.2 Testing IT Outsourcing Arrangement_ITOS Relationship

Next attempt is to answer the second research question. The hypotheses drawn are:

H2(a): Degree of outsourcing is significantly related to IT outsourcing success.

H2(b): Length of contract is significantly related to IT outsourcing success.

In order to investigate for more than two independent groups of cases, the statistical procedure called analysis of variance was conducted on degree of outsourcing (minimum, selective, total outsourcing) and the duration of contract (short, medium and long term contract). Similarly, to test for homogeneity of variance, Levene's test was conducted. Given that Levene's test has a probability greater than 0.05, as assumption has not been violated by both variables, interpretation of ANOVA can then proceed. Table 5 shows the result of ANOVA test.

Table 5: ANOVA for IT Outsourcing Arrangements

Variables	Degree of Freedom	F-ratio	p-value
Degree of outsourcing	2,140	0.477	0.622
Duration of contract	2,140	1.468	0.234

Table 5 depicts the relationship between degree of outsourcing (minimum, selective and total outsourcing) and ITOS. Also duration of contract (short, medium and long-term contract) and outsourcing success relationship was examined. The F-ratio with F-probability value greater than 0.05 is not significant for both IT outsourcing characteristics, suggesting that degree of integration does not influence outsourcing success, ($F(2,140)= 0.477$, $p > 0.05$). Similarly, length of contract do not significantly influence IT outsourcing success ($F(2,140) = 1.468$, $p>0.05$).

The results provide evidence that there is no significant difference in either degree of integration or duration of contract towards ITOS. Apparently, these findings imply that irrespective of degree of integration which translate to percentage of outsource IT function, and duration of contract do not influence outsourcing success. Hence, hypotheses H2a and H2b are not supported.

5.3 Testing the Moderating Effect

Following, the moderating effect of IT outsourcing arrangements on the relationship between partnership quality and IT outsourcing success are examined. Attempt to answer the final research question, leads to the hypotheses;

H3a: The positive relationship between partnership quality variables and IT outsourcing success will be moderated by duration of contract.

H3b: The positive relationship between partnership quality variables and IT outsourcing success will be moderated by degree of integration.

To examine the impact of IT outsourcing arrangement as a moderator on the relationship between partnership quality and IT outsourcing success, it is first, required to examine whether any change in the base relationship is significant under varying values of the moderator variable. This is also known as an interaction effect and is similar to the interaction term found in analysis of variance (Hair *et al.*, 1998).

In general, for a variable to be a moderator, it is desirable that the variable be uncorrelated with the predictor (Baron & Kenny, 1986). This first recommendation was undertaken. Table 6 summarizes the results of the significance difference within groups.

Table 6: Significance Difference between Groups

Partnership Quality Constructs	Duration of Contract	Degree of Integration
Benefit_Risk Sharing	F(2.140)=1.004	F (2,140)=.017
Trust	F(2,140)=1.966	F(2,140)=.156
Commitment	F(2,140)=2.382	F(2,140)=.777
Knowledege Sharing	F(2,140)=.372	F(2,140)=.071

Not significant, p<0.5

Table 6 demonstrates that partnership quality constructs have no significant relationship with each IT outsourcing arrangements. Accordingly, the condition that IT outsourcing arrangements should not vary systematically with partnership quality contracts is supported. Hence, the first condition for moderating variable is upheld.

Secondly, for a moderator model to be valid, the interaction between the independent variable and the moderator must be significant in a regression of the independent variables on the dependent variables (Baron and Kenny, 1986). The moderating effect of a variable is measured by running regression models with an interaction term between moderator and independent variable. Since the moderating variables in this research are categorical type, and independent variables are continuous type, Analysis of Covariance (ANCOVA) is used. The significance of an interaction term in the model is tested using F-test in analysis of covariance. If the interaction is significant, the different effect of partnership quality (PQ) on ITOS will be examined, at each level of the moderator, by looking at the regression coefficients. Partial eta squared, η^2 measures the strength of the effect of interaction on ITOS, that is, the variation in IT outsourcing success that can be explained by the interaction.

The following analyses the moderating effect of length of contract on the relationship between partnership quality and IT outsourcing success. Table 7 shows the regression models with interaction term between length of contract (short, medium and long-term contract) and partnership quality.

Table 7: Moderating Effect of Duration of Contract

Interaction term	F-value	p-value	Partial η^2
Benefit Risk Sharing*Contract	0.582	0.560	0.008
Commitment* Contract	1.470	0.233	0.021
Trust* Contract	5.726	**0.004**	0.077
Knowledge Sharing*Contract	0.232	0.794	0.003
Overall Partnership Quality* Contract	1.404	0.249	0.020

From Table 7, it is observed that there is significant moderation effect of trust in the relation between trust and duration of contract at 5% significant (p-value = 0.004). And it explains about 8% of the variation in IT outsourcing success. Consequently, the nature of this interaction was explored by examining the regression coefficient. This is shown in Table 8.

Table 8: Regression Coefficients for the model with Interaction between Trust and Duration of Contract

Interaction term	Beta	t-value	p-value	Partial η^2
Intercept	0.884	0.988	0.325	0.007
Trust	0.953	4.805	0.000	0.144
Short	3.021	3.198	0.002	0.069
Medium	1.382	1.031	0.304	0.008
Long	0	-	-	-
Trust*Short	-0.673	-3.244	0.001	0.071
Trust*Medium	-0.414	-1.464	0.145	0.015
Trust*Long	0	-	-	-

Category 'Long' is the reference, beta = 0

From the table above, it shows that the regression coefficient for Trust*Short is -0.673, and significant at 5%. This can be interpreted as the difference in the effect of trust on ITOS between organizations with short-term contracts and others. Again, the nature of this interaction is explored. From Figure 2, it is observed that the effect of trust is stronger amongst organizations with medium or long-term contract.

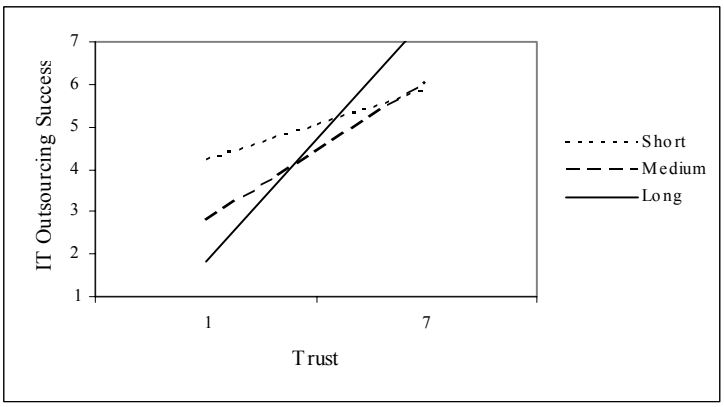

Figure 2: Mean of IT Outsourcing Success and Trust at Different Duration of Contract

From Figure 2, it appears that for these organizations success increases rapidly as trust increases. However, it is not so amongst organizations having short-term contract, where from low to high level of trust, increment in IT outsourcing success is slower. It indicates that trust which is the degree of confidence and willingness to cooperate may take a reasonable time frame in order to develop as partnership, a dyadic relationship is a long-term relationship. There is, therefore, a moderating effect of length of contract on trust (construct of partnership quality) on IT outsourcing success. This concludes support for hypothesis H3a.

The investigation on degree of outsourcing as a moderator follows. Table 9 depicts the regression models with interaction term between degree of integration (minimum, selective and total outsourcing) and partnership quality.

Table 9: Moderating Effect of Degree of Integration

Interaction term	**F-value**	**p-value**	**Partial η^2**
Benefit Risk Sharing*Integration	2.626	**0.076**	0.037
Commitment* Integration	0.400	0.671	0.006
Trust* Integration	0.452	0.638	0.007
Knowledge Sharing* Integration	1.268	0.285	0.018
Overall Partnership Quality*Integration	0.217	0.805	0.003

The interaction between benefit risk sharing and degree of integration is significant at 10% level (p-value=0.076), and it explains about 3.7% of the variation in ITOS. Additionally, the nature of interaction was explored. Further analysis does confirm that level of integration moderate the benefit risk sharing and IT outsourcing success. Table 10 shows the regression coefficient for the interaction between benefit risk sharing and degree of integration.

Table 10: Regression Coefficients for model with Interaction between Benefit Risk Sharing and Degree of Integration

Interaction term	Beta	t-value	p-value	Partial η^2
Intercept	5.366	9.629	0.000	0.404
Benefit Risk Sharing	-0.024	-0.210	0.834	0.000
Minimum	-1.440	-1.982	0.049	0.024
Selective	-1.458	-2.150	0.033	0.035
Total	0	-	-	-
Benefit Risk Sharing*Minimum	0.274	1.849	0.067	0.067
Benefit Risk Sharing*Selective	0.306	2.216	0.028	0.028
Benefit Risk Sharing*Total	0	-	-	-

Category 'Total' is the reference, beta = 0

Table 10 shows that the main effect of business risk sharing is not significant (beta = -0.024, p-value = 0.834). Surprisingly, the effect emerges when interaction terms is included in the model. The interaction term of benefit risk-sharing and minimum integration contribute significantly (beta = 0.274, p-value = 0.067) at 10% level to ITOS and predict 6.7% of the variation. On the other hand, interaction of benefit sharing and selective outsourcing contributes significantly (beta = 0.306, p-value = 0.028) at 5% level to ITOS and predict 2.8% of the variation. This finding indicates different directions of Benefit Risk Sharing effect as shown in Figure 3.

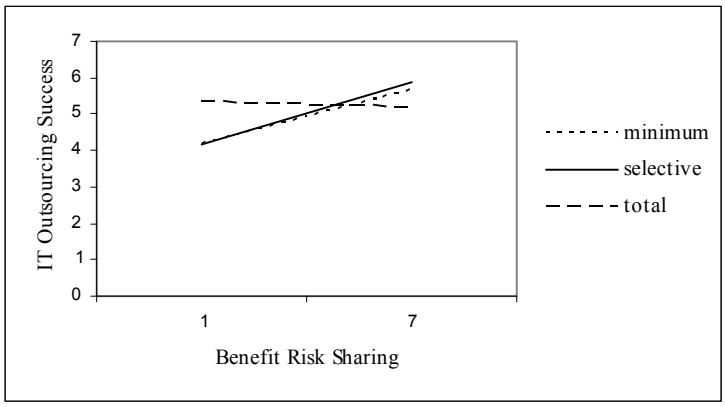

Figure 3: Mean of IT Outsourcing Success and Benefit Risk Sharing at Different Degree of Integration

Again, the nature of this interaction was explored. Figure 3 shows that when benefit risk sharing is at a low level, IT outsourcing success is higher amongst organizations with total outsourcing practices. However, as benefit risk sharing increases, organizations with minimum or selective practices tend to be more successful in outsourcing, while organizations with total outsourcing practices remain somewhat the same. When all organizations are assumed to be homogeneous (without interaction), the positive effect of benefit risk sharing on IT outsourcing success among organizations with minimum or selective outsourcing is cancelled off by the weaker relationship amongst organizations with total outsourcing. As a result, the main effect is found to be insignificant. This maybe explained by the nature of relationship change between the client and the service provider from one that is relatively independent to a more tightly coupled, service provides are likely to take more management responsibility and risks, particularly in total outsourcing. Thus, organizations therefore make decisions on the extent to which collective responsibility and risks will be integrated, also the extent in which they relinquish control of outsourced IT functions besides duration of commitment (Lee *et al.*, 2004). Furthermore, clients may fear that they become too dependent on their service providers (Lacity & Hirschheim, 1993). This gives validity for the hypothesis that benefit risk sharing of partnership quality and ITOS is moderated by the levels of integration.

6.0 LIMITATIONS and IMPLICATIONS

This study is not without limitations. While information from IT manager should provide a high level of confidence in the quality of the information gathered, selection biases could still exist due relying to a single informant for both the antecedent and dependent variables.

Secondly, this was an empirically-based study, whereby the research model developed provides a snapshot research. All concepts and relationships were measured at one point in time, thus essentially from a static perspective. A longitudinal work is suggested.

The third limitation was that, this study examined the proposed research model only from the service receiver's perspective. Analysis of the relationship which includes service provider's perspective would be crucial for developing and sustaining high-quality partnership over time.

Finally, results of this study may not be completely generalized and may have to be carefully interpreted since the setting was restricted to Malaysia. The practice of outsourcing in Malaysia and its socioeconomic environment may have played a distinctive role in the findings of this study. It would be interesting to see other researchers explore further based on similar economic development, and preferably in the context of Muslim-dominated society.

7.0 DISCUSSION and CONCLUSION

This model was developed based on 3 research questions, with 7 hypotheses that were tested in the context of IT outsourcing. Five of the 7 hypotheses were supported and confirmed that partnership quality constructs are key variables that influence the success of IT outsourcing. The hypothesized antecedent (benefit risk-sharing, trust, commitment and knowledge-sharing) explained nearly a third of the variance in outsourcing success. However, IT outsourcing arrangements (degree of outsourcing and duration of contract) is not significant to the success of outsourcing but findings showed moderating effect on the relationship between partnership quality (trust and benefit risk-sharing) and outsourcing success. It is observed that there is significant moderation effect of trust in the relationship between trust and duration of contract at 5% significant. Graphically shown (Fig.2), the effect of trust is stronger amongst organizations with medium or long-term contract. On the other hand, significant moderation effect of benefit risk-sharing and degree of outsourcing at 10% significant level. Further probe (Fig.3) suggests that organizations with minimum or selective practices tend to be more successful. Therefore at the very least, there is some indication that both the arrangements do suggested moderating effect to the success of IT outsourcing.

For researchers, the work presented confirms that partnership quality is a predictor to IT outsourcing success. The degree of outsourcing and length of contract does have a moderating effect on relationship in achieving outsourcing success. Other specific arrangements parameters, such as type of contract and type of relationship are suggested for further research in the area of IT outsourcing. Apart from this, we believe that there is value in retesting established IT outsourcing models with a number of different samples, in different context, over time, in order to ascertain whether a model really does hold up as a valid and reliable model.

For practitioners the results imply that participants of IT outsourcing must take note the importance of cooperation between service receivers and service providers in reaping benefits from such practices. This might translates to possible repeated awarding of contracts. Even though IT outsourcing arrangements do not directing contribute to the overall benefits of IT outsourcing, IT managers must be aware of the effect of different outsourcing arrangements may have some bearing on the IT outsourcing relationship.

IT outsourcing is not a homogeneous phenomenon, thus different types of IT outsourcing arrangements lead to different types of agency problems that require different type of management. Hence, in conclusion, it is proposed that apart from attention given to various facets of partnership, the choice of outsourcing arrangements organizations settled for, do pose an impact on the outsourcing benefits.

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